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Letters to the Editor

Rapid Rate Nonsustained Ventricular Tachycardia Found on Implantable Cardioverter-Defibrillator Interrogation

Relationship of Rapid Rate Nonsustained Ventricular Tachycardia to Outcomes in the SCD-HeFT Study

The paper by Chen et al. (1) on the relevance of rapid rate nonsustained ventricular tachycardia (RR-NSVT) noted on routine defibrillator follow-up is intriguing. Figure 3 in the article demonstrated an inappropriate shock for an episode of RR-NSVT that self-terminated but for which the device was "committed" to delivering therapy. A question for the authors is what role did such shocks play in their finding of increased mortality with these episodes? They note that nearly 5% of patients received inappropriate therapy. Did the mortality results change significantly if patients were stratified by shock appropriateness? This is particularly relevant in light of the dramatic findings of the MADIT-RIT (Multicenter Automatic Defibrillator Implantation Trial-Reduce Inappropriate Therapy) trial (2) and could provide further evidence that a minimalist approach to defibrillator therapy is best for patient outcomes.

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Reply

Rapid Rate Nonsustained Ventricular Tachycardia Found on ICD Interrogation: Relationship of RR-NSVT to Outcomes in the SCD-HeFT Trial

We appreciate the interest in our paper and the opportunity to reply to Dr. Andraws' most thoughtful comments (1).

It is very difficult to isolate the different facets of the rapid-rate nonsustained ventricular tachycardia (RR-NSVT) and inappropriate shock-mortality relationships. In fact, it is likely that these relationships are not entirely independent of one another. Patients could have a widely varying number of RR-NSVT episodes as well as multiple inappropriate (and appropriate) shocks, and these events could have happened in any possible order over a range of time intervals. Earlier events may have had an impact on later events. A model that attempts to capture all of the variable relationships would be impossible to interpret.

A recent study by Powell et al. (2), from the Boson Scientific–sponsored ALTITUDE database demonstrated that inappropriate implantable cardioverter-defibrillator (ICD) shocks from sinus tachycardia, sustained ventricular tachycardia, noise artifact, or oversensing *did not* increase mortality, whereas inappropriate ICD shocks from NSVT *did* increase mortality (as well as shocks for ventricular tachycardia/ventricular fibrillation/atrial fibrillation). This suggests that it may be the substrate and arrhythmias, not the shocks themselves, that are the primary contributors to the increased mortality that has been observed in such patients.

In a previous analysis from the SCD-HeFT (Sudden Cardiac Death in Heart Failure Trial), appropriate *and* inappropriate shocks were both found to be independently associated with an increase in mortality (3). In that analysis, NSVT was included in the category of inappropriate shocks (example illustrated in Figure 3 of our paper), where the RR-NSVT terminated, but the ICD delivered shock therapy due to the confirmation algorithm used in that generation of Medtronic ICD (model 7223). These data, taken together, strongly support longer detection times in an effort to minimize unneeded ICD therapy.